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EXAMINER

HO, ALLEN C

ART UNIT PAPER NUMBER

2882

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/451,965

Applicant(s)

SENZIG ET AL.

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 15-29, 34 and 35 is/are rejected.
- 7) ☒ Claim(s) 12-14 and 30-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 18 December 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 5 is objected to because of the following informalities:

Claim 5 refers to a method, whereas claim 4 is an apparatus claim.

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show how the x-ray source assembly and the detector assembly are movably coupled to the positioning means and that they can move independently relative to the other assembly and the positioning means as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 8, 22, and 23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled

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in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to show how the x-ray source assembly and the detector assembly can move relative to each other and the positioning means to alter the plane of interest.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1, 3, 18, 20, 24-27, and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Stenfors (U. S. Patent No. 6,309,102).

Stenfors disclosed an imaging system and method for generating an image of an object (3), the imaging system comprising: a base (5); a table (2); a positioning means (18) movably coupled to the base; an x-ray source assembly (10) comprising an x-ray source

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configured to emit x-ray signals and coupled to the positioning means; and a detector assembly (11) comprising a detector coupled to the positioning means. The system is configured to: enable an operator to select at least one mode of operation; alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode, wherein the system is configured to rotate the positioning means relative to the base so that the detector assembly and the source assembly are rotated about the object; and generate an image of the object.

7. Claims 1-3, 18-20, 24-27, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Baba *et al.* (U. S. Patent No. 5,598,453).

Baba *et al.* disclosed an imaging system for generating an image of an object (14), the imaging system comprising a base (inherent), a table (9), a positioning means (8) movably coupled to the base, an x-ray source assembly comprising an x-ray source (2) coupled to the positioning means, and a detector assembly comprising a detector (4') coupled to the positioning means, the system configured to enable an operator to select at least one mode of operation (302) consisting of a computed tomography volume mode and a fluoroscopy mode; rotate the positioning means relative to the base so that the detector assembly and the source assembly are rotated about the object and the table; and generate an image of the object (305, 307).

8. Claims 1-3, 18-22, 24-29, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Roos *et al.* (U. S. Patent No. 6,041,097).

Roos *et al.* disclosed an imaging system for generating an image of an object (26), the imaging system comprising a base (14), a table (24), a positioning means (16) movably coupled to the base, an x-ray source assembly comprising an x-ray source (18) coupled to the positioning

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means, and a detector assembly comprising a detector (20) coupled to the positioning means, the system configured to enable an operator to select at least one mode of operation (30) consisting of a computed tomography volume mode and a fluoroscopy mode; rotate the positioning means relative to the base so that the detector assembly and the source assembly are rotated about the object and the table; and generate an image of the object (44). The system is configured to move the detector relative to the x-ray source for changing the magnification (54) and the plane of interest.

9. Claims 4-7, 9, 10, 15, 16, 18-21, 24-27, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Grady *et al.* (U. S. Patent No. 4,365,343).

Grady *et al.* disclosed an imaging system for generating an image of an object, the imaging system configured to operate in at least one of a plurality of modes of operation and comprising: a table (T); a source assembly (X) comprising a movable x-ray source; a detector assembly (II) comprising a movable detector; a positioning means (U) comprising a base (L) and an arm (U) coupled to the base for positioning the source assembly and the detector assembly relative to the object, the source assembly movably coupled to a first end portion (U_b) of the positioning means and the detector assembly movably coupled to a second end portion (U_a) of the positioning means; and a controller (inherent) enabling an operator to selectively operate the system in at least one of a plurality of modes.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenfors (U. S. Patent No. 6,309,102) as applied to claims 1 and 18 above, and further in view of Khutoryansky *et al.* (U. S. Patent No. 5,636,259).

Stenfors disclosed an imaging system and method for generating an image of an object (3). The system is configured to: enable an operator to select at least one mode of operation; alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode. However, Stenfors did not teach that the system is configured to perform computed tomography volume mode, x-ray fluoro mode, and a tomosynthesis mode. Khutoryansky *et al.* disclosed a universal radiographic/fluoroscopic digital room, which is capable of performing a number of operations. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to design an imaging system so that the system could perform as many operations as possible, since a person would be motivated to save cost and space by integrating multiple operations into a single imaging system.

12. Claims 4, 6, 9, 10, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenfors (U. S. Patent No. 6,309,102) in view of Grady *et al.* (U. S. Patent No. 4,365,343).

Stenfors disclosed an imaging system for generating an image of an object (3), the imaging system configured to operate in at least one of a plurality of modes of operation and comprising: a source assembly (10) comprising a movable x-ray source configured to emit x-ray signals; a detector assembly (11) comprising a movable detector; a table (2) for supporting the object, the source and the detector are movable relative to the table; a positioning means (18) for

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positioning the source assembly and the detector assembly relative to the object, wherein the positioning means is movable relative to the table; and a controller (inherent) enabling an operator to selectively operate the system in at least one of a plurality of modes.

However, Stenfors did not teach that the source assembly and the detector assembly are movably coupled to the positioning means.

Grady *et al.* disclosed an imaging system wherein a source assembly and a detector assembly are movably coupled to the positioning means.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a source assembly and a detector assembly that are movably coupled to the positioning means, since a person would be motivated to provide means for adjusting the field of view.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stenfors (U. S. Patent No. 6,309,102) and Grady *et al.* (U. S. Patent No. 4,365,343) as applied to claim 4 above, and further in view of Khutoryansky *et al.* (U. S. Patent No. 5,636,259).

Stenfors in combination with Khutoryansky *et al.* disclosed an imaging system for generating an image of an object. However, these references did not teach that the system is configured to perform computed tomography volume mode, x-ray fluoro mode, and a tomosynthesis mode. Khutoryansky *et al.* disclosed a universal radiographic/fluoroscopic digital room, which is capable of performing a number of operations. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to design an imaging system so that the system could perform as many operations as possible, since a person would be motivated to save cost and space by integrating multiple operations into a single imaging system.

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14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grady *et al.* (U. S. Patent No. 4,365,343) as applied to claim 4 above, and further in view of Gilblom (U. S. Patent No. 5,949,848).

Grady *et al.* disclosed an imaging system for generating an image of an object as set forth in claim 4. However, Grady *et al.* taught using an image intensifier. Gilblom disclosed a flat detector panel for x-ray imaging. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a flat detector panel, since a person would be motivated to reduce the size of the detector and to digitize the image data.

15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grady *et al.* (U. S. Patent No. 4,365,343) as applied to claim 4 above.

Grady *et al.* disclosed an imaging system for generating an image of an object as set forth in claim 4. However, Grady *et al.* taught that the positioning means comprises a U-shaped arm. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a positioning means comprising a base and a gantry, since a person would be motivated to use a structure that is more rigid in order to stabilize the images.

16. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baba *et al.* (U. S. Patent No. 5,598,453) as applied to claim 18 above.

Baba *et al.* disclosed an imaging system for generating an image of an object as set forth in claim 1. However, Baba *et al.* did not teach that the positioning means comprises a c-arm. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a c-arm, since a c-arm is mobile and less expensive.

Allowable Subject Matter

17. Claims 12-14 and 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The following is a statement of reasons for the indication of allowable subject matter:

The allowable subject matter in claim 12 refers to an imaging system in accordance with claim 11, wherein at least one detector panel is rotatable relative to the positioning means.

The allowable subject matter in claims 13 and 14 refers to an imaging system in accordance with claim 11, wherein the detector comprises a first detector panel and a second detector panel.

The allowable subject matter in claims 30-33 refers to an imaging system in accordance with claim 26, wherein the detector assembly comprises a first detector panel and a second detector panel, and wherein to collect image data, the system is configured to angularly position the first detector panel relative to the second detector panel.

Response to Arguments

19. Applicant's arguments filed on 12 December 2001 have been fully considered but they are not persuasive.

The applicant contends that the references cited in the 102 rejections do not teach nor suggest a an imaging system configured to enable an operator to select a mode of operation, alter the position of the detector assembly and the source assembly relative to the other assembly and the object based on the selected mode, and generate an image of the object.

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The examiner respectfully disagrees with applicant's argument. The claims recite an imaging system configured to operate in at least one of a plurality of modes of operation. The examiner takes the position that an imaging system operating in any mode would read on this claim. In essence, the applicant has not claimed a multimode imaging system, but a single-mode imaging system. Furthermore, the examiner is of the opinion that the combination of Stenfors and Khutoryansky *et al.* in the 103 rejections above reads on a multimode imaging system.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (703) 308-6189. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached at (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Allen C. Ho
Examiner
Art Unit 2882

ACH
March 18, 2002


ROBERT H. KIM
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